

The invention is not limited to the examples described and shown since many modifications can be made without going outside its scope.

CLAIMS

- 1 - Machine for moving receptacles in front of at least one inspection station,
 5 along a given direction, said machine comprising:
- a lower frame (5) supporting a front half-carriage (24) and a back half-carriage (25) extending along longitudinal planes parallel to each other, each half-carriage comprising:
 - a motorised device (37) driving at least one belt in rotation, the
 10 motorised drive device (37) being located at a first end of the half-carriage,
 - at least one return device (41) for at least one belt, located at the second end of the half-carriage,
 - at least one first endless drive belt (38) installed between the
 15 motorised drive device (37) and the return device (41) with one strand placed at a distance from the strand of the belt supported by the other half-carriage so as to delimit a receptacle gripping and movement path (43) between them,
- characterised in that:
- the lower frame (5) has at least two transverse sides (8) one of which has a
 20 passage compartment (11) for the end of a receptacle input conveyor (2) designed to cooperate with a return head on the input side (13), installed on the frame, while the other transverse side (8) has a passage compartment (12) for the end of a receptacle output conveyor (3) designed to cooperate
 25 with a return head on the output side (14) installed on the frame and the return head on the input side, to delimit a volume interrupting the conveyance (V), each transverse side being provided with a linear guide system (21) extending on the outside of the conveyance interruption volume (V),
- and in that it comprises:
- a mobile carriage (23) supported by linear guide systems (21) and
 30 composed of the front half-carriage (24) and the back half-carriage

(25), each half-carriage comprising a rigid bridge (26) installed at each end, and sliding on the linear guide systems (21),

- and a displacement system (61) moving one half-carriage away from or towards the other half-carriage located outside the conveyance interruption volume. (V).

5

2 - Machine according to claim 1, characterised in that each half-carriage (24, 25) comprises a geared motor (39) installed on the centre-line of the motorised drive device. (37).

3 - Machine according to claim 1 or 2, characterised in that each half-carriage (24, 10 25) comprises:

- a second return device (41) for a belt, supported by the rigid bridge (26) and being located at the second end of the said bridge and extending superposed from the first return device (41), each return device (41) being composed of a pulley,
- 15 – and a second endless drive belt (38) installed between the motorised drive device (37) and the second return device (41) with one strand of the belt passing in front of a bearing plate (47) supported by the rigid bridge (36) and at a distance from a strand of the second belt (38) supported by the other half-carriage,
- 20 – and a common drive drum (37) driving the first and second belts (38).

4 - Machine according to claim 1 or 3, characterised in that each bearing plate (47) supports a return device (41) and is installed on at least a guide slide (49) along a vertical direction and supported by the rigid bridge (26), each bearing plate (47) being moved in vertical translation on slides using a control device (50), so that the 25 height of the belts can be adjusted.

5 - Machine according to either of claims 1 to 4, characterised in that each half carriage (24, 25) comprises a rigid bridge (26) formed from a beam (27) supported at each end by a support arm (28, 29) fitted with a pad (31) cooperating with a linear guide system (21).

30 6 - Machine according to claim 5, characterised in that each support arm (28, 29) is composed of a bracket with a vertical leg (32) connected to the beam (27) and a horizontal leg (33) facing the transverse side close to the frame and supported by an upright (34) fitted with a pad at its base (31), the horizontal legs (33) and the uprights

(34) of the half-carriages installed facing each other and delimiting part of a passage compartment (11, 12) for a conveyor (2, 3).

7 - Machine according to claim 6, characterised in that each bracket of a half-carriage (24, 25) installed facing a bracket of the other half-carriage delimits the volume for the installation of the motorised drive devices (37) and the return devices (31).

8 - Machine according to any of claims 1 to 7, characterised in that the system (61) to move the half-carriages towards each other or away from each other (24, 25) consists of two screw-nut systems installed between the adjacent ends of the two rigid bridges, one of the systems being fitted with a movement control device (69) and being connected to the other system through a transmission (66) extending parallel to the longitudinal extension planes.

9 - Machine according to claim 7 or 8, characterised in that the system (61) controlling movement of the half-carriages towards or away from each other controls simultaneous and identical displacement of the two half-carriages (24, 25) that remain centred about the displacement plane (D) along the middle of the gripping and displacement path (43) of the receptacles.

10 - Machine according to claim 8, characterised in that movement of the half-carriages towards or away from each other (61) controls movement of one of the half-carriages with respect to the other kept in the fixed position, each screw-nut system being provided with a device for selecting the method of moving the half-carriages with respect to each other, namely a centred displacement or an offset displacement from the displacement plane.

11 - Machine according to claim 1 or 2, characterised in that:

- 25 - each motorised drive device (37), associated with a geared motor (39), forms a traveller installed free to slide on the rigid bridge along a direction approximately parallel to the direction of movement, so that belts (38) can be assembled and disassembled, said mobile traveller being locked in position by a belt tensioning and locking system (56),
- 30 - and each return device (41) is installed on a belt tensioning system (57).

12 - Machine according to claim 11, characterised in that the belt locking and tensioning system (56) is of the toggle fastener type.

13 - Machine according to claim 1, characterised in that the lower frame (5) is equipped with a longitudinal support plate (80) installed free to slide on two cross pieces (81) supported by the longitudinal sides of the frame and extending parallel to the transverse sides (8), the plate (80) being designed to support elements forming part of the inspection stations (Pi).

14 - Machine according to claim 13, characterised in that the longitudinal support plate (80) is connected to a curtain wound around a drum installed on the longitudinal back edge of the lower frame (5).

15 10 15 - Machine according to claim 1, characterised in that the lower frame (5) is equipped with four stands (9) adjustable in height and supporting the supporting frame (6) for which the transverse sides (8) are adjustable in length.

16 - Machine according to any of claims 1 to 15, characterised in that it comprises an upper frame (90) supported by the lower frame (5) and formed by four uprights (91) connected at the top part by a frame, the two back uprights supporting at least one back longitudinal beam (97) designed to support elements forming part of the inspection stations (Pi).

17 - Machine according to claim 16, characterised in that the support beam (97) is installed on the upper frame (90) on transverse slides controlling its movements towards and away from the longitudinal extension plane.

20 18 - Machine according to claim 16 or 17, characterised in that the upper frame (90) delimits a top compartment (93) through an access door on the façade (95).

19 - Machine according to either of claims 1 to 18, characterised in that it comprises a protection cladding (100) and an access door (101).

20 25 30 20 - Machine according to claim 19, characterised in that the access door (101) comprises a chassis (110) delimiting an opening (111) and equipped with displacement guide means for at least one mobile panel (120) comprising a reception structure (122) for instrumentation and/or control means (123) for controlling the machine, and accessible from the façade (124) of the mobile panel, and reception structure displacement means (122) adapted so that when the mobile panel is in the open position (120), the façade of the instrumentation and/or control means (123) is facing towards the opening (111) so that an operator in front of the opening, can access the opening and at the same time access the instrumentation and/or control means (123).

21 - Machine according to claim 20, characterised in that the reception structure displacement means (**122**) are composed of movement guiding means (**140**) that slide and pivot the mobile panel (**120**, **121**) such that when the mobile panel is in the open position, the façade (**124**) of the mobile panel is facing the opening (**111**).

5 **22** - Machine according to claim 20, characterised in that the reception structure displacement means (**122**) are composed of reception structure pivoting means (**122**) for the man-machine interface such that the façade of the man-machine interface (**123**) is accessible equally well in the open and closed positions of the mobile panel.

10 **23** - Machine according to claim 20, characterised in that the displacement guide means enable the façade of the man-machine interface to move into a plane forming an angle with the plane delimited by the opening (**111**), equal to between 40° and 135° and preferably between 60° and 110°.

15 **24** - Machine according to claim 20 or 23, characterised in that the sliding guide means enable the man-machine interface to move into a plane approximately perpendicular to the plane delimited by the opening (**111**).

20 **25** - Machine according to claim 20, characterised in that the guiding means (**140**) allow a mobile panel (**120**) to slide and pivot, and comprise at least one support and guide rail (**145**, **153**) for at least one roller device (**146**, **149**) fitted on the mobile panel, the mobile panel being connected by a pivot (**176**) at its top part and bottom part to an extension bar (**175**) guided in translation along a direction approximately perpendicular to the opening.

25 **26** - Machine according to claim 20, characterised in that the sliding and pivoting guide means (**140**) comprise at least one support and guide rail (**145**, **153**) for at least one roller device (**146**, **149**) fitted on a first mobile panel (**120**) hinged to a second mobile panel (**121**) installed hinged on the chassis, the mobile panels (**120**, **121**) being intended to fold in contact with each other in the open position of the opening.

30 **27** - Machine according to claim 25 or 26, characterised in that the sliding and pivoting guide means (**140**) comprise a support and guide rail called the upper rail (**145**) arranged in the top part of the chassis and a guide rail called the lower rail (**153**) arranged in the lower part of the chassis, one supporting the roller device(s) (**146**) fitted on the mobile panel, and the other supporting a guide device (**149**).